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PRACTICAL OBSERVATIONS

ON

THE USE AND ABUSE

OF

COLD AND WARM

SEA-BATHING,

IN VARIOUS DISEASES;

PARTICULARLY IN

SCROFULOUS AND GOUTY CASES.

BY

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PHYSICAL
CHEMISTRY

INTRODUCTION

The study of physical chemistry is a branch of chemistry
which deals with the physical properties of matter and
the changes which take place in matter during chemical
reactions. It is a branch of chemistry which is
concerned with the measurement of the physical
properties of matter and the study of the changes
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INTRODUCTION.

IN the use of a remedy so generally adopted at the present moment as cold and warm bathing, innumerable mistakes occur, some of them of a serious or troublesome tendency, in consequence of its being commenced, or persisted in, under improper circumstances. It is with an intention of laying down some regular and fixed principles, that the following observations have been drawn up. They are

condensed within as small a compass as the nature of the subject would allow, and are directed to those cases which most frequently occur.

Much indeed has been written on the subject; but a few rules and observations appear to me to be still wanting, of such a nature as shall be easily and generally understood and applied, and so comprehensive as to include the most important and necessary modes of using this simple but efficacious remedy.

The following facts, though partly collected from the writings of others, are chiefly the result of my own observation and experience. My object in stating them, is to ascertain the principles which

ought to regulate the use of the bath under its different gradations of temperature, and to point out the cases where it will have a salutary influence, and where it may be injurious. Besides the temperature, the time of bathing and the state of the constitution and of the health, ought to be taken into the account; and these will therefore be here considered; so that by the perusal of the following pages, it is hoped all the beneficial consequences of bathing may be understood, and its prejudicial effects avoided.

COLD AND WARM BATH.

Bathing has been practised from the earliest periods of society among the inhabitants of every nation, either as a religious ceremony, as the means of preserving cleanliness, or as a source of comfort and pleasurable gratification. For the latter purposes, in the warmer climates, Nature first prompted its use; and hence arose a knowledge of its salutary effects in contributing to general health. Indeed the various accounts which we have of this custom, from the remotest times, amongst savage as well as refined people, fully prove, not only that it is of very high antiquity, but that it was almost uni-

versally followed. To enlarge on this part of the subject, would be incompatible with the intended brevity of the plan of this Essay. It is sufficient to remark, that what was introduced to gratify, was continued from the same motive; and from this circumstance it has arisen, that its abuses are so numerous, and have taken such extensive and deep root; the regulations under which it was followed as a source of pleasurable gratification, and as a luxury, by no means pointing out the principles or rules, according to which it ought to be applied as a remedy.

Its primary action causes the sensation which we call the *shock*. The indirect consequences of this, and the degree of sudden diminution of animal heat, are gene-

rally different, according to the state of the feelings and the health at the time, modified also by peculiarities of constitution. Under a state of disease, its influence and effects vary so much, that in order to elucidate them, it will be necessary to take a comprehensive view of the effects of heat and cold on the human body. As we proceed in this investigation it will appear, that an opinion entertained by the ancients, and countenanced by Hippocrates, although in some degree well founded, can only be admitted in a limited and relative sense; namely, that the subsequent heat, succeeding to the cold applied, is *always* proportionate to the intensity of the latter; for even in the best health, a variation from this general rule frequently occurs. But to proceed with the more im-

mediate object of this part of our work, it will be proper to direct the attention of the reader, in the first place, to the primary action of cold, as well as to its secondary influence.

Cold, philosophically speaking, may rather be considered as the absence of heat, than as a positive quality of bodies. In the operations of Nature, cold and heat, in their different gradations, are as necessary as they are wonderful, whether we contemplate their effects on the human race, on animals in general, or on inanimate matter.

On the living animal, cold can exert only a relative action; and by this relative action, which depends on the particular

condition or state of the animal, its use, under the form of a cold bath, may prove serviceable or otherwise. This is the grand point to which we ought to direct our enquiries; and from which, rules for its artificial application ought to be drawn. By a constant observance of this, we may also be enabled to detail and explain the causes which render a recourse to the bath either useless or prejudicial. In short, by keeping this in view, what is erroneous in practice may be detected and avoided, and all the real and possible benefit this remedy can afford, may be obtained.

A continued application of cold to the surface of the body, either by immersion in the bath, or in any other mode, is found

to diminish the vigour of the arterial pulsation; its frequency in some is much lessened, while in others it is increased; but its *strength* is always diminished. This consequence, generally speaking, varies according to the duration of the cold, its intensity, and the state of animal heat and vigour. Salutary effects are produced where the cold is continued only for a proper period, while pernicious consequences result from too long an exposure to it. Those who fish for flounders with spears on the northern coast of Ireland, up to their chins in water, and those who, for the space of four hours, continue exposed to the cold of the sea water at Brighton and other places, procuring shrimps, while thus employed have their pulse diminished in frequency from the

natural standard, *thirty* beats in a minute, and sometimes more, and which continues for a considerable time afterwards. In every instance where I had an opportunity of investigating this circumstance, the result was invariably the same—the pulse was lowered, attended with a remarkable diminution of animal heat.

A healthy person chilled with cold, has not the frequency of his pulse so suddenly diminished by plunging into a cold bath, as would be the case if the animal heat had been, by exercise or other causes, raised higher than the accustomed standard. It is from this salutary action of cold, judiciously applied in fevers, made known and recommended by the late Dr. Currie, in his *Essays on the subject*, that

so much advantage has arisen to society; the experience of this celebrated physician, as well as of all those who have followed his practice in this respect, clearly and decidedly proving, how very effectually diseased action is moderated by a well-regulated affusion of cold water.

The medium heat of the human body while in health, is indicated by 98 of Fahrenheit; and from 58 to 60 or 62, of the same scale, marks the temperature of the sea, during the warm and temperate months.

In January, 1811, during hard frost and snow, a thermometer made by Berge, which stood at the freezing point in the open air, on being immersed in the sea at

Brighton, rose from five to six degrees. During the warm summer months, the difference of temperature between the air on the coast, and the sea, is not, by experiment, found to be more than from six to seven degrees ; so that it appears that the difference between the temperature of the air on the sea-coast, and that of the sea, is nearly the same in the number of degrees, in winter and in summer ; but the difference in the nature of the temperature during these seasons, is reversed, the sea being relatively colder in summer, and warmer in winter, than the air on the sea-coast. In some subsequent experiments I made during the prevalence of intense cold in the same month of January, the sea water sunk the mercury in the thermometer to the freezing point ; but then the atmospheric

temperature was at 25, and in the night at 20° of Fahrenheit.

Thus holding in view, that the effects of the bath will depend partly on its own temperature, partly on the previous heat and condition of the human frame, and partly on the duration of its application, we may form a pretty accurate general rule to guide us in its management and application, for the cure or alleviation of disease. To those labouring under the various species and degrees of debility, the action of the bath, as water is more dense than air, should be so modified with respect to temperature, time, and frequency, as to produce a healthy condition.

The terms, *bracing*, *constringing*, *tonic*,

and others of a similar meaning, are to be understood only in a figurative sense. The muscular fibres which serve as the moving organs of our frame, under diseased influence, are said to be, in common and popular language, relaxed, unstrung, enervated, &c.; and the remedy capable of removing or lessening this morbid condition, is consequently designated by the terms already mentioned. This mechanical sort of language is formed on a supposed resemblance between the living subject and a stringed instrument out of tune; and where the animal frame is unhinged and enervated, the action of remedies which give tone, firmness, and strength, becomes necessary. Among these, the cold bath, under proper regulations, holds the first place. But although this phraseology

may be allowed in a loose and popular sense, yet it would be wrong to accede to it in its complete and strict acceptation; the living fibre, and the whole animal machine, being constructed in so wonderful and beautiful a manner, and its functions being so intimately connected and accurately arranged, that scarcely any comparison of such a nature can give even a faint idea of the object to which we allude. The idea, however, though faint, and not accurately conveyed by this figurative language, may be of use, to suggest to such as are not conversant with the actual structure and mechanism of the human frame, some knowledge of its condition, when in the enjoyment of health, or labouring under disease.

A youthful person in the vigour of

health, on plunging into the cold bath, instantly feels a confused and indescribable sensation, arising from a sudden change of temperature, and rapid transition from one medium to another. On entering the bath step by step, until the whole body is immersed, the sensation is very different. In the latter case, the perturbation, as well as the shock, is much less considerable; a general shrinking, attended with a convulsive feeling, agitates the frame; the involuntary respiration is quick and irregular, and some moments elapse before a collected state of regular perception is recovered. Should the weather be warm, or temperate, the feelings become extremely grateful; should the air be unusually cold, the temperature of the water, to the feeling, seems warmer than it actually is. Other sensations are excited, which are neither accu-

rately attended to nor clearly remembered, till a habit of using the cold bath is formed. When this happens, some of the feelings described cease to exist, and others of them are experienced with less intensity.

Our sensation of heat and cold is very different at different times, even under the same temperature; and in the use of the bath it is much influenced by our immediate preceding condition. From that wonderful and innate power which we possess of generating heat, so as to resist a very considerable degree of cold, a bath which at first seemed cold, feels less so the longer we remain in it, unless we continue in it for a great length of time; displaying at once the power of animal life,

and the fallacy of judging from our feelings alone, as to the temperature of the medium in which we live.

Some time after putting on the usual clothing, a genial glow suffuses itself over the surface, and a pleasing warmth succeeds, accompanied by refreshed and invigorated feelings. In general, this effect may be considered as a proof of its salutary influence; for when a sensible glow, arising from the cutaneous re-action, does not immediately succeed, it is the commonly received opinion, that cold bathing, except under particular regulations, will not contribute towards the improvement of health, and if injudiciously persisted in, may be the cause of bringing on disease.

This observation is undoubtedly well founded; for if cold immersion is succeeded by chilliness, languor, lassitude, head-ach, and an irresistible disposition to drowsiness, after repeated fair trials under the different regulations usually enjoined, a strong presumption may fairly be entertained, that the use of the cold bath, if not actually dangerous, will not prove serviceable; and this, like every other active remedy, should not be persisted in without sufficient evidence of its salutary tendency. These consequences may however ensue, if the degree of cold in the open sea is too considerable for the delicate condition of the invalid; and of this there cannot be a stronger evidence, than the advantage arising to those of a

weakly habit, from the use of a bath of a temperature less cold, and more suited to their state of bodily strength; since by this change in the temperature of the water, that renovated glow over the surface, already mentioned, is regularly and certainly produced.

Equal mischief frequently springs from continuing inactive while immersed up to the chin for an unreasonable length of time. On the coast of Spain, the patient is directed to remain up to the chin during one, two, or more rosaries, or a time equal to what is necessary to repeat this form of prayer; a practice in weakly habits often injurious, and which in a climate less warm, would be attended with serious consequences.

That vital power or re-action of which we speak, has its source in what physicians call the *callidum innatum*, which is constantly renewed by a most admirable combination of chemical agency and animal function, an important office, performed by the action of the lungs on the respirable air. From this arise the vivifying principle existing in our blood, and that nervous energy on which our animal and mental health depend. Animal heat thus produced, is constantly rendered more temperate by the secretion from the skin, which increases as the medium we live in becomes more heated; a diminution of heat being produced by the process of evaporation, and thus a sort of counter-action is maintained, conducive to our healthy existence.

In the warmer climates, the profusion of perspirable matter poured out on the surface is considerable, generally proportioned to the heat and exigencies of the system; the temperature of the skin modifies that of the lungs, and under some circumstances of pulmonary diseased action, where hæmoptises threatened instant danger, placing the body in a cold bath, has had the direct effect of lessening the hæmorrhage; and were it not for the dread of re-action, this remedy might be much depended on. In pectoral complaints, however, cold bathing ought not to be resorted to, except in very rare instances, and then with the utmost circumspection.

As man is necessarily exposed to various and extreme degrees of heat and cold,

he is formed so as to enable him to bear them without danger; or even much inconvenience: were not this the case, he could not bear with impunity those vicissitudes of temperature he meets with, from the burning heats of the torrid zone, to the extreme cold of the high northern latitudes.

While the temperature of the air is many degrees below 98°, the power of generating heat under such circumstances, is dependant on the same re-acting influence that produces the glow after cold immersion. This active power is defined by Dr. Atkin—"The condition of animal organization indispensably requisite to the capability of function." This capability is frequently inert, in consequence of debility; and cold bathing acts *indirectly* as a

means of restoring strength, in conjunction with proper food, air, and exercise. But when this power is exceedingly impaired, cold applied in the form of a bath, without proper regard to the constitutional circumstances of those who use it, in place of producing salutary consequences, is often followed by deranged action, not easily removed even by the most judicious means that long experience can devise; nay, diseases of years' continuance, or of a fatal nature, have frequently been the result.

In many individuals, the animal heat is found not to exceed 83° or 84° of Fahrenheit; in others it is nearly fifteen degrees higher; yet no difference as to general health is observable. But, whatever be

the usual degree of animal heat, its sudden increase or diminution for any length of time, is often the unerring precursor of disease; the arterial pulsation having very nearly a correspondent increase or diminution. The peculiarly slow pulsation natural to some individuals, when increased by disease, is apt to lead to an erroneous judgment, since the number of pulsations, even when they are unwell, does not amount to much more than the usually healthy standard; and an error of a similar nature may arise, if the healthy condition of very old people is inferred from the regularity of their pulse, since that in fact is an indication of disease; their natural and healthy pulse has a marked intermission, and when this intermission is restored, the approach of convalescency is indicated.

In northern climates, where sudden transitions from heat to a degree of cold below the freezing point, frequently occur with impunity, the strong influence of custom and habit on the human frame, in conjunction with the power of which we are speaking, has been often exemplified; a degree of heat as high as 144 has in some cases been borne, which has been succeeded by extreme cold, without any bad consequence to the health or strength. Indeed, in the ordinary temperature of our rooms in winter, we have daily evidence of persons inhaling for hours, air heated to a degree beyond 60°, and afterwards entering into the open air, when perhaps at a temperature from 20 to 30 degrees lower, without consequent disease or inconvenience. Yet these transitions, when the density of the

air is much diminished, as in elevated situations, are not unfrequently attended with danger. Humboldt and his companions, while traversing the Andes, on rapidly ascending to a most unusual height, found that the air was reduced to half its usual density, and felt intensely cold and piercing; respiration was laborious, and blood oozed from their eyes, lips, and gums; “they stood on the highest spot ever trod by man.”

This general view of constitutional peculiarities, in respect to the influence of heat and cold on the human frame, leads us to the more particular subject before us, namely, the application of cold and warm bathing to the alleviation or cure of disease. From the general result of experi-

ments made at Brighton in the summer of 1810, and subsequently, it appeared, that if the heat of the body had been much raised, either by the increased warmth of the weather, or by previous exercise, the pulse became more steady, slow, and regular, on immersion into the sea, and this effect was more decided and evident after some moments had elapsed. If, from the cold state of the weather, the heat of the body was diminished previous to entering the bath, the change in the pulse was very inconsiderable; if any change did take place, the celerity was increased; and this, either under the former or latter circumstances, was more particularly perceptible after any active exercise while in the water, such as diving, swimming, &c. On persons labouring under disease, the effects were so

various, that it would be a tedious task to enumerate them; where the debility was great, the pulsation under the influence of the cold bath often became quick and small, and the recurring vigour in this respect *was proportionably increased*; but its return was so much the slower as the constitution had been previously more weak.

The late Dr. Currie has most accurately stated the very considerable advantage arising from the application of cold water, by affusion on the surface, in the early stage of fever; and every day's experience gives results favourable to the principles he has laid down: of this I had numerous and convincing proofs during the time I was physician to an extensive county hospital, as well as in a long train of private prac-

tice, more particularly in incipient typhus, and during the burning heat of scarlatina; and I am convinced, that in consequence of the practice not having been more generally followed by physicians, probably from the apprehension of hazarding their professional reputation, many lives have been lost in fever.

Long before the publication of Dr. Currie's excellent observations on the subject, I applied cold water externally in the ardent fever of small-pox, with the most obvious effect of mitigating the subsequent symptoms. Were not the boldness and novelty of the practice a source of objection to the natural timidity of parents, its more extensive application might have saved the existence of many who have sunk

under the secondary symptoms of this relentless malady.

In almost all diseases, as well of the acute as of the chronic class, a perceptible alteration of the pulse is produced; and after what has been premised, we may naturally infer, that whatever has a direct tendency to act upon so very important a function, must ultimately have a more permanent effect upon the further condition of our health: thus, if the pulse is morbidly slower or quicker from disease, and by a course of bathing is brought to a regular degree of celerity, we may augur favourably, in the first instance, as to the happy issue of the complaint, more particularly if other favourable symptoms take place at the same time.

In fever the heat is increased, and the quickness and tone of the arterial pulsation so much augmented, that in many instances persons, from a natural instinct, should opportunity serve, plunge into cold water, and from it most salutary results have arisen, even in eruptive diseases. Indeed, on *principle*, if a cooling plan in respect to air, drink, and regimen, is beneficial, why should cold affusion, the operation of which being more immediate and active, and which can be applied on so large a scale, not be resorted to? The local application of cold, by means of cataplasm, renewed as often as is necessary, has the most beneficial effect in cases of cynanche tonsillaris, or parotideæ; but it must be used with unceasing and persevering attention, otherwise it will fail in producing the desired effect.

An observation naturally occurs here, with respect to the possibility of checking or breaking in upon the current of fever, when once commenced, by means of the repeated application of the cold affusion, or by the powerful effects of antimonial preparations. I have no doubt, from repeated instances, of the practicability of removing fever in this way in the course of a few hours; and in those fevers specifically marked by a regularly succeeding train of symptoms, where it is impossible to check them in *limine*, I have as little hesitation in declaring, from the frequent experience I have had of the effects of cold application, that by it they may be considerably mitigated, and thus become comparatively mild.

Thus far as to the immediate consequences of cold repeatedly applied in acute diseases. In affections of the chronic class, the *rationale* must vary; for here the effect is indirectly produced, and the changes that take place, therefore, will require to be particularly and regularly specified.

When chronic disease depends on some deep-rooted organic derangement, either in the head, thorax, or abdomen, our attention must be directed to its more immediate cause before recourse is had to the use of either a cold or warm bath. Should depletion be requisite, and a previous trial of the bath be rashly entered on, an aggravation of the calamity, and its probably increased duration, will be the consequence. Mistakes of this kind, especially if persisted

in, have often produced irrecoverable paralytic or chachectic disease, rendering existence miserable for years afterwards.

Should the functions of the liver, that important organ which is so often deranged, and in so obscure a manner as to evade detection, be impaired, or rendered unhealthy, from the severe and continued influence of climate, intemperance, or other remote causes, we should seek for some means of relief previous to the hazard of entering on the bath, except indeed in some instances, where the tepid or warm bath may, in conjunction with other remedies, be deemed proper. Incredible mischief has arisen from invalids rushing into the bath, when the lurking evil actually exists in a diseased liver, while simple in-

digestion, or some similar affection of the stomach and bowels, is thought to be the particular complaint: of this every day's experience brings proof; indeed, to it we may trace many obstinate, and frequently incurable diseases.

A gentleman, between fifty and sixty years of age, was ordered to Brighton on account of a general failure of his strength and loss of appetite. His colour was sallow, and the *adnata* of his eyes yellow. He bathed in the sea four times:—in the afternoon of the fourth day an hæmorrhage from the nose took place, which lasted some hours: he again bathed on the second day after this occurred, and an hæmorrhage of a more violent degree ensued; a short time afterwards his legs became œdema-

tous, and dropsical symptoms appeared. He soon afterwards left Brighton, and I know not what followed.

Where the digestion, or general state of the alimentary canal, has been deranged for any continuance, the most accurate scrutiny should be made respecting the functions and condition of the liver; and if it is found unhealthy, the best means must be tried to restore it to its natural state, otherwise disappointment and danger will inevitably ensue from the cold bath.— Under the general head *bilious*, those affections of the liver are now arranged, from an inconsiderate view of the subject, and a mistaken practice, often founded on this erroneous classification—the lurking cause of the evil still lying concealed from obser-

vation; while under all this complicated derangement, the patient is ordered into the cold bath, as if it could remove such a deeply-rooted organic affection.

In some cases of insanity considerable advantage may be derived from sudden and unexpected immersion. The last case I saw treated in this way proved successful: it was that of a married woman between thirty and forty years old, who became insane from a shock her mind had received on hearing some unexpected news of a dreadful nature. She became inquisitive, loquacious, animated, and cheerful to excess, with very few intervals of rest; and this for many weeks without mitigation. On the first trial she was carried blindfolded to the verge of a deep pool of fresh water, her

safety being secured by a proper apparatus for pulling her out, whence she was suddenly pushed into the water, and as quickly as possible taken out. The first immersion had evidently a very good effect, and on every subsequent preparation for a repetition, her mind adverted to the consequence; and whether from the shock—or the cold—or the conjoint effect of both, producing an interruption to the distempered condition, a progressive amendment of her mind ensued, and after a few weeks she was restored to reason.

Persons advanced in life should enter on a cold bath with great caution; for here, as is often the case with uncertain remedies, it cannot be said, “if it does not serve, it will not injure”—*Nil prodest quod*

non lædere possit idem.—Few indeed, in the evening of life, are benefited by it, for reasons obviously deducible from the principles already mentioned; and although instances have occurred, where, from early use and habit, it has been beneficially practised, yet, as a general rule, it should be forbidden in such cases to persons advanced in years. In relation to them, we should particularly advert to the indispensable necessity of that re-action which has been so often mentioned; and as it cannot be expected to occur in advanced life, the tepid or warm bath will be more beneficial, some degree of vigour being required to resist the shock of the cold bath, to which the debilitated state of old age is unequal. At this season of man's existence, the animal functions are performed with diminished

energy; the circulation is slow, often undulating and interrupted; the skin is arid, and less porous; and the muscular fibre rigid and inelastic. These are all conditions natural to human nature; the machine under such circumstances is easily deranged, and when deranged, not easily restored to order: there may, indeed, be exceptions, but I am disposed to think that they must be very strong reasons, which can justify exposing old people to the risk which they run from the cold bath.

During the earlier days of childhood, cold bathing is recommended as extremely salutary, from the idea that, as this stage of life is marked with debility, and consequently more liable to the inroads of dis-

ease, from the vicissitudes of our climate; —a precautionary measure such as this, the tendency of which is to *harden* the constitution, must be wise and beneficial; but to this doctrine, in an unlimited sense, there are evidently strong and well-founded objections.

Children undoubtedly derive considerable advantage from sea air and sea bathing, yet I have known many infants suffer most materially by the latter practice, from causes not easily ascertained, but probably from the degree of cold being too intense for their tender nature; where this is not the case, there can be no doubt that it invigorates and strengthens the habit to a much greater degree than any other means.

In some children, however, the repugnance to the cold bath is so strong, that more mischief than good results from its use, and therefore perseverance under such circumstances is very unjustifiable; perhaps, in such cases, Locke's advice, to wash the feet of children regularly in cold water, may be followed with advantage.

With the foregoing exceptions and limitations, in cases of infancy and old age, the practice may be considered as favourable in the intermediate seasons of life. The foregoing reasons may serve to account for this, without descanting further on the point before us, holding in view, that those of a sanguine temperament, endowed with a naturally vigorous re-

action, as indicated by the pulse and complexion, are more likely to derive advantage from the cold bath, when they are debilitated by disease, than those persons who are of a naturally lax fibre, pale complexion, weak pulse, feeble frame, and phlegmatic habit. To the latter a tepid or warm bath in the first instance is more particularly suited, previously to entering on the cold bath, and from this mode considerable advantage may ultimately be expected to arise.

Thus far as to the general outline of information respecting the cold bath. As the practice is gaining ground in a very considerable degree, a few particular cautionary injunctions become necessary.

To those indeed in health, who bathe for pleasure, few cautions need be given: they should principally avoid the cold bath while they are over-heated, or under the effects of exhaustion from excessive exercise, or from that state of enervated and sickly sensation, the consequence of intemperance, or over indulgence in luxurious eating. Not long ago a person at Cambridge, brought on sudden death by plunging into cold water while in a state of intoxication. Such fatal effects, indeed, do not often occur; yet common prudence requires that the cold bath should be avoided by persons in this condition.

No person should remain unusually long in the water, even when the heat of the sun and their own feelings prompt them

to such an indulgence, especially after a full meal.

To invalids, who bathe for the restoration of general health, or for the mitigation or removal of local complaints, it would be almost impossible to give directions and cautions which would exactly suit every case. To those who from long indisposition are much reduced in strength, whose digestion and secretions are performed with languor and sluggishness, whose sleep is unrefreshing, and whose mind is irritable and fretful, the sudden use of the cold bath is generally unfriendly, until they pass a certain quarantine on the borders of the sea, and by the effects of its salutary air are, in some measure, restored to health and vigour. After this preparation, if the

temperature of the bath be adjusted to the state of debility, so as by a regular progression to increase its coldness, according to the restoration of strength, the invalid may with propriety bathe in the open sea. From a neglect of these precautionary rules, many have been obliged to abandon its use, having plunged into the water when so cold as to produce enervating chills, and nervous feelings, accompanied with headache, loss of spirits, and languor. Invalids of this description should not bathe before breakfast, but choose a favourable moment an hour or two after that meal, taking particular care to avoid being chilly or cold before entering the sea.

To the generality of persons, one or two

immersions are sufficient; but this depends upon the effect experienced after a few trials, beginning with caution, and persevering with regularity, and in all cases drying the skin, and putting on the usual clothing with all expedition. Persons of very delicate habits should be provided with a large flannel gown, and instantly after drying the skin, envelop themselves in it for a few minutes previous to dressing, to prevent any chill from evaporation. Gentle exercise immediately afterwards, provided the weather be moderately temperate, should be used; but if the season be *very* cold or *very* warm, this is by no means expedient, and some active employment within doors, or in the shade, will answer the purpose better.

SHOWER BATH.

Amongst the ancient Greeks, the most common method of bathing was by placing the person on a low seat, and pouring cold water over his body for a few minutes. This, literally speaking, is what Dr. Curriè calls cold affusion; a practice of considerable importance, and first used for the cure of fever by Dr. Wright, formerly of Jamaica.

The shower bath is an improvement on this method, and under many circumstances is found extremely convenient and useful: it must, however, under this form, be considered as only a modification of the cold or warm bath. The shock it occasions

is of a different description from that of the cold bath ; its effects are more transitory, and the advantage to be expected from it may be considered as less certain than that which is derived from actual immersion : however, there are circumstances in which it may be used with great advantage ; but these are few, when compared with those in which immersion is useful. One fact may be mentioned, that either cold or warm water from the shower bath, may be applied much oftener without danger than in the usual manner.

WARM BATH.

Among the nations of antiquity, the use of the warm bath was very general; and with various changes in respect to its application, has descended to the present time: as a source of pleasure, or object of luxury, independent of its reference to comfort or cleanliness, it was employed with great regularity: few omitted going into the bath once, and persons of distinction were accustomed to bathe four, five, or six times a day. Their most luxurious moments were passed in this way; it was valued by all classes of society as one of the principal comforts of existence; and amongst the Greeks, according to the discipline of their religion, the enjoining an

abstinence from the bath, was considered a severe punishment for immoral offences. The *Balnea* at Rome were spacious, magnificent, and numerous. It cannot but excite our wonder and admiration when we learn, that at one time there were upwards of eight hundred and fifty public baths required to satisfy the wants of that great city: the magnitude and extent of those most admired, may in part be conceived from the ruins of the baths of Dioclesian, Titus, and Paulus Emilius; even some of those which were used by the plebeians, were supplied through silver pumps. This was loudly complained of by Seneca, who, at the same time, as an instance of the luxury of the people, said, that the freedmen trod on gems. It is observed by Fabricius, that in no one thing was the ex-

cessive luxury of the Romans more conspicuous than in their public baths, some of which were capable of containing at one time, the incredible number of between 1500 and 2000 persons.

In those days, and, previously, among the Grecians, it was frequently abused ; on which account, as well as from the irregular manner in which it is practised by Oriental nations at the present moment, we are not to look for satisfactory information either from them or the ancients, with respect to it as a remedy for those diseases to which it is applied in modern practice. In this point of view, indeed, the warm bath could not be safely recommended, or advantageously used, before the invention of the thermometer, by which, and not by

the feelings of the patient, its temperature ought to be regulated.

The warm bath is less necessary to us than it was in those times and places, where the use of linen next the skin was unknown, and where those dreadful diseases, such as leprosy, &c. so frequently prevailed; yet, even in modern times, it must be esteemed as a remedy which can be safely and advantageously employed, in cases, and under circumstances, where other remedies would be comparatively useless. As, therefore, it may be of the greatest importance in alleviating the sufferings of those labouring under disease, as well as in contributing to the comfort and improvement of general health, the warm bath ought to be regulated on fixed and steady principles:

thus its proper application will be better known, and its use become more general.

Innumerable facts in proof of its utility might be adduced, from the records of antiquity, or from examples of a more recent date, were they requisite; but I designedly omit this part of the subject, and enter on what is more necessary to my purpose, namely, those rules I deem most judicious, respecting its application as a medium of conveying heat.

The warm bath may with propriety be divided into natural and artificial. Few of the former class are found in this country, as those of Bath and Buxton may be said to be the only warm springs we possess, in each of which the heat differs considerably:

the temperature of the Cross bath at the former place is from 92 to 94; that of the King's bath 106; while the Hot bath is as high as 116. Buxton water is as low as 82. The natural heat of the baths most resorted to on the Continent is much greater than even the hottest spring at Bath, as for example those of Carlsbad in Bohemia, Alhama in Spain, and Bareges; the heat of the former being as high as 165 degrees, and that of the latter 120: at Aix-la-Chapelle the thermometer is raised by the waters of one of the baths to upwards of 140. These are amongst the most striking examples of what are called natural hot baths. The artificial hot bath of sea water affords many of the advantages known to be derived from the above waters, and is the more immediate object of consideration, as

a medium through which an appropriate temperature may be applied to the various circumstances of diseased action, or with a view to diminish those uncomfortable sensations, the usual consequence of irregularity or intemperance in the former periods of life.

On the human frame while in a healthy state, the influence of heat, when conveyed through so high a conducting power as that of water, is very considerable: if properly applied, it gives a tranquil and pleasurable sensation, soothes agitated feelings, moderates the circulation, renders the skin soft, smooth, and pliable, gives tone to the secreting organs, and energy to the intellect—affording a consoling consciousness not to be attained by any other artificial

means. Its powers over morbid action may be partly conceived from the above ; but such is the diversity of symptoms arising from the various character of disease, that an enumeration of the direct or indirect effects of the warm bath, in such cases, would be almost endless, and certainly unnecessary. On this point, as well as on all others of general science, the leading principles being clearly understood, their application to the more minute parts of the subject is obvious and easy.

In entering on a course of warm bathing, the condition of the patient, the moment best suited to that condition, and the particular temperature of the water, are of essential consequence. When from a due consideration of the circumstances

of the disease, we have determined on its use, the best general rule for regulating its temperature must be founded on the *animal heat of the person about to use it*. The animal heat, as before mentioned, of different persons, is very different, and even in the same person under various circumstances, more particularly of disease, the variation is very considerable; so much so, indeed, that the use of the bath at a certain temperature, may be attended with *mischievous* consequences to a person to whom, at another moment, it might be of most essential service; from the heat of the water not being properly adjusted to the heat of the person at the time. This is of primary moment, as a *leading feature* in the general use of the warm bath, but more particularly with re-

spect to delicate persons, in the treatment of whom a neglect of this point has often been prejudicial: hence we see, in many instances, extraordinary advantage arise from the use of the Bath waters in preference to those of Buxton; and the tepid bath of Buxton afford relief where waters of a higher temperature were found to fail, or to produce injury. Even in Bath itself this fact is strongly exemplified, as advantage or disadvantage arises from its waters, according to their different degrees of temperature. Facts in confirmation of this important remark, occur every year at the Caroline baths in Germany, at those of Baresges, of Aix-la-Chapelle, and under our own observation in England, where the indiscriminate practice of entering on a course of warm salt-water bathing, frustrates the

effects of a remedy of all others of most general utility, when applied with the necessary circumspection.

A gentleman, aged forty, had suffered for some months from a spasmodic contraction of the muscles of his right shoulder, attended with painful irritation, and at night considerable febrile action. He used baths of various temperatures in an irregular manner, both at Brighton and elsewhere, without advantage; at length he tried the Buxton tepid bath, which, after a few trials, removed the complaint. The heat of those he had used previously, was from twelve to fifteen degrees greater than Buxton water; in this gentleman the animal heat was, comparatively speaking, very low.

Of late much ingenuity has been exercised, to show that the warm bath, when impregnated with various mineral or vegetable ingredients, cannot be more advantageous than a warm fresh water bath. According to this idea, the various warm mineral springs, and warm sea-water baths, which are known to have such powerful influence, are considered as deriving it entirely from their temperature. But though the facts, as stated by Seguire, the Bishop of Llandaff, and others, may lead to the presumption that few or none of the ingredients held in solution are absorbed by the skin, yet the number of cases in which cures have been effected by either natural or artificial baths of this description, where the simple warm bath was found to have no good effect, although previously used in

various ways, affords such strong evidence of their superiority, that it cannot reasonably be doubted.

In Jerusalem, according to St. John, the waters of the pool near which Christ cured the paralytic man, were found salutary only when in a troubled state; which, independent of supernatural agency, must be owing to their mineral impregnation. Celsus, Pliny, and many of the ancients, particularly mention the superior efficacy of saline, aluminous, and sulphureous baths, over those of a more simple description: these, by some, are called metallic baths, from the water being impregnated with the soluble particles of the scoria of metals.

Aretæus extolls the application of warm oil to the whole surface of the body, as a powerful antispasmodic ; and this idea suggested the use of a warm bath of milk and water to the late celebrated Dr. Warren, which, in conjunction with a free use of tincture of opium, proved efficacious in a case of tetanus. This is related by Sir Gilbert Blane, in his valuable observations on the diseases of seamen ; who remarks also, that there is something in a bath of this kind extremely soothing to the human nerves : he considers the efficacy of the warm bath in this disease, from the experience of others and his own observation, to depend greatly on the length of time it is continued ; he has kept a patient for six hours in a well-regulated bath.

Within the last year, a lady of high respectability, who had tried baths of different kinds, from which she received no relief, was very considerably benefited by the regular and continued use of an artificial Bareges bath. Her complaint was an obstinate rheumatic affection, depriving her of the use of her lower extremities.

In another instance the Bath waters produced the happiest effects, after the ineffectual use of a simple tepid bath; while innumerable instances occur at the sea-shore, to evince the superiority of warm sea-water baths over those of fresh water, their heat being regulated according to the strength and temperature of the patient, and the nature of the disease under which he suffers.

There is a certain feeling experienced in the warm bath while we are in health, that may give an idea of its effects, when applied under the circumstances of disease. Its power over morbid action is often very instantaneous and wonderful, setting at defiance the most plausible reasoning on the subject; bodily irritation is suddenly soothed by it, and tranquillity induced, when other means fail.

In November last, a person of extensive commercial connections, aged sixty-eight, became extremely irritable and unhappy, in consequence of pecuniary losses; he passed sleepless nights, and his appetite forsook him. On coming to Brighton, he imprudently entered into a warm bath of 100°, while his intestines were constipated,

his pulse high and quick, and his heat at night very considerable. The consequence was, he became feverish, his head affected with a fixed pain, and all his uncomfortable feelings considerably increased. He was about to abandon the warm bath in despair ; but on using purgative medicines, taking his bath at 92° in the forenoon, avoiding wine and cordial medicine, of which he had used great quantities, his general health was soon reinstated. His error consisted in the abuse of a useful, and to him salutary remedy, having applied it at an improper time, and of a temperature unsuitable to the nature and state of his disease.

An officer in the cavalry, of an athletic make, and lively, active disposition, con-

tracted a rheumatic complaint, which deprived him of the healthy flexion of his lower extremities, by imprudently sitting on damp ground to rest himself, after violent exertion while hunting. Among other remedies prescribed, he used the warm sea-water bath, but of a very high and improper temperature, without any mitigation of the symptoms. This arose from his retiring to bed soon after the bath. I directed a bath of ninety-five degrees for ten minutes each day at twelve o'clock, the patient to walk, or rather hobble, for some time previously, and subsequently, to the bath, and to continue the same exercise as long as he possibly could. At first these efforts were nearly intolerable, and could only be continued for a very short time; but after a few trials, amendment

followed, and in about five weeks a complete cure took place.

The necessity of exercise before and after the warm bath, in cases of a less marked character than the above, is every day evinced, and must be held as one of those general rules to which there are very few exceptions.

Every anomalous nervous action, to which the human constitution is liable, is known to be influenced by the medium in which we breathe. The valetudinarian, whose health is tolerable under the mild atmosphere of Italy, or the south of France, passes a miserable season in regions less temperate and more variable. Hence we can reason on the effects resulting from the

repeated and well-regulated use of the warm bath on diseased nervous sensation, under the necessary rules I am endeavouring to inculcate. A bath of the *same* degree of heat as the animal temperature of the person using it, will, for a few moments after immersion, *increase* that heat very considerably; nay, if it be five degrees lower than the usual standard, which is 98° , it will raise the animal heat as high as 100° : this proceeds from a cessation of the cooling process of évaporation from the skin, and the augmentation of heat occasioned by the medium in which the body is immersed, added to what is at the same time internally generated. This fact instructs us as to the proper application of the warm bath in a variety of cases, where success *totally* depends upon the well-regulated temperature

of the bath, more particularly in nervous affections, when the most minute attention should be paid to all the symptoms, and to the whole process of cure. Tiberius is said to have lost his life by an improper use of the bath.

From this view a *rationale* may be formed, respecting the mode in which the Bath waters remove paralytic affections in many instances, while their indiscriminate application brings them on: this, no doubt, is occasioned by the difference of temperature in the waters of that place being so considerable*.

In like manner, the animal heat is increased on a sultry day, when the atmosphere is warm and humid; for thus its

* Vide page 56.

capability of acting as a solvent of the perspirable matter, is lessened; and by the evaporation of this perspirable matter, a moderate temperature is preserved, and the constantly increasing heat diminished. The celebrated Dr. Franklin frequently lessened the inconvenience of restlessness, arising from too great an augmentation of heat while in bed, by rising, and remaining exposed to the cooling air of his apartment for some time; sleep being thus induced upon his return to bed. This experiment I have often had occasion to make myself, with similar results; and we may on a like principle, account for the feverish restlessness brought on in some persons, by first using a warm bath of a high temperature, and retiring soon afterwards to an overheated room, or warm bed, and the soothing sleep that is generally the consequence

in all fevers, when by any means the heat can be diminished.

M. R. aged thirty-nine, by a complaint in his bowels of some months continuance, had been reduced from strength and vigour to great emaciation and debility: for his recovery, sea air, warm bathing, and nourishing diet, were prescribed: with a view to this plan, he came to Brighton. After passing his morning, and the greater part of the forenoon in bed, he was accustomed to dine late, go into a warm bath at night, and soon after retire to bed; an accession of fever set in some hours after; his nights were passed in disturbed sleep, and his expected amendment protracted: I therefore directed the use of a warm bath early in the afternoon, and his dinner to be taken about an hour after, so as to give time for

digestion previously to his retiring to rest, with an injunction to rise earlier: an observance of these rules soon contributed to his complete recovery.

Agreeably to the principle here inculcated, it may be observed, that in many *chilly* and nervous habits, where the animal heat is *low in degree*, the warm bath, if used just before going to bed, may be advantageously employed, the person remaining in it longer at a time than in other cases. As a warm bed, in its effects, may in most respects be considered as much resembling a warm bath, the same consequences are found generally to arise from the use of the one as from the other—refreshment and renovation of strength ensuing, provided their temperature is exactly suitable to the case; and irritation, listlessness, and prostration

of strength, being the usual consequences of continuing either in a bed or a warm bath, of a temperature either too cool, or too much heated.

Although the late Dr. Beddoes, in his treatise on consumption, does not specifically point out the principle here recommended, according to which warm bathing can alone be advantageously entered on; yet he certainly had it in view, when he speaks of a *blood-warm bath*: the essential observation, however, has escaped him, as well as all other authors I have read upon this important subject, that the blood-heat of one person may be many degrees different from that of others, and on *this*, and the *duration of the application of the warm bath*, must depend the favourable

result, and consequently the rule which ought to guide our conduct in its application.

The two following cases will clearly point out the truth and importance of this principle.

A lady, aged forty-three, had been for eight months affected with a high degree of nervous irritability, attended with a pulse remarkably quick, and general debility; her appetite was very much impaired, and her rest disturbed and irregular. In this state, for some days in succession, she imprudently used a hot bath of a very high temperature: the consequence was, an increase of the diseased action, and a diminution of her strength. Alarmed at the

effects, she abandoned the hope of recovering by this mode, and with reluctance was persuaded to enter on a bath of 92 degrees: this lessened the celerity of her pulse considerably, quieted the distressing symptoms, and in less than five weeks her amendment was remarkable.

A patient, aged nineteen, had suffered from a chlorotic habit, with prostration of strength and general languor, for fourteen months: her intestines were obstinately constipated. In May 1811, she was ordered to Brighton, for the purpose of using the warm bath three times a week, and gentle exercise along the sea-shore after it. Her bath was used at 94°; and at the time I visited her, on placing the ball of a thermometer under her *axilla*, the heat was in-

licated by 93°. She invariably felt chilly in the bath, and on coming into the air, her uncomfortable and listless feelings were alarmingly increased. As there was no appearance of amendment, a different plan became necessary: I therefore directed, that half an hour before bed-time her bath should be used at the heat of 98; that some warm wine and water should be taken on retiring to rest, and that she should ride on horseback in the forenoon, when the weather was fine; with some secondary regulations as to diet and medicine. By a steady perseverance in this plan for two months, her health was perfectly restored.

Thus, adverting to the principle on which I have been insisting, and at the same time to constitutional peculiarities, we may mo-

dify this remedy so as to render it a most efficient agent in the removal of diseases of various descriptions. Attention to this principle, and these peculiarities, is more particularly necessary in the treatment of females, and children of a delicate constitution; though with respect to them an indiscriminate practice too often prevails, that has led to very serious and alarming consequences. My daily experience warrants me in asserting, that the greatest circumspection is necessary in ascertaining when a cold and when a warm bath will be most proper, or at what temperature the latter should be used by delicate children and females, as benefit cannot otherwise be expected, than from a due consideration of their naturally irritable habits, and of the powerful influence an improper or irregular

mode of procedure may exert on their constitutions. This observation I particularly wish to impress, because the most trifling difference of temperature is often the cause of great mischief, where the constitution is naturally delicate, or rendered unusually so by disease, or by the use of improper medicines, administered by persons irregularly educated to the science of medicine, or irregularly practising it.

Time of remaining in the Bath.

The utility of the warm bath, depends also in a great degree on the length of time during which the patient remains in it. On this point a variety of opinions prevails, and there is certainly great difficulty in laying down any general rule.

As the heat of the bath increases that of the person using it, generally from five to eight degrees beyond its own temperature, if that temperature should be perfectly suited to the circumstances of the case, the pulse becomes tranquillised, and generally much less frequent. These circumstances are of considerable importance in determining the proper time of continuing in the bath; for we may be assured, if it should alter the tone of the circulation from a morbid to a natural state, that its ultimate effect on the organic action of our system will be of a most salutary kind; and even the refreshing feeling it gives while we are under its direct action, may be considered as a warrant of the advantage to be expected from it.

Dr. Marcard, who has bestowed considerable attention on this part of the subject, instituted a number of experiments, to ascertain with precision the effect the warm bath has on the pulse: the experiments were made by attending to the pulse in himself, and different persons of various ages and temperaments; and he concludes, 1st, That the pulse is diminished in quickness in every bath under the heat of 96° ; 2d, That the greater the celerity of the pulse, the more is it diminished by the bath, and that the temperature of a bath between 85° and 96° of Fahrenheit, seems to have the greatest power in reducing the circulation.

Almost every suspension of a diseased

action, is a step towards amendment, and where this follows immersion in a bath of a proper degree of heat, we may conclude that the advantage would be greatly increased, by remaining in it much longer than is usual in this country.

Heat, in a certain degree, is so necessary to animal existence, that when suspended for a time, it recurs with an increase of power. On this recurrence, as a secondary effect of cold, its salutary application depends ; but as the *direct* power of the one is so very different from that of the other, it is necessary to be particular in the distinction, and to recollect, that a certain degree of heat is necessary to muscular motion. This is particularly observable in those animals that pass their time

in a torpid state during the cold season, and are revived by the summer's heat. The two sources of heat are, the medium in which we live, and organic action; the first source, of course, differing according to the temperature of the climate, and the other according to the circumstances and organization of the animal. We may thus account for the general health of the inhabitants of temperate climates being better, and longevity more common among them, than in regions where extremes of heat and cold prevail; and for the salutary agency of cold bathing, in an indirect manner producing animal heat, while the same effect is directly produced by the use of the warm bath.

In this country, the general time for re-

remaining in the warm bath, is from twenty minutes to half an hour. This practice seems to arise from a strong prejudice respecting its relaxing powers. If we remain in a bed of the temperature of a warm bath, fatigue is removed, unless the time thus spent is either very long or very short, or the heat of the bed very trifling. Hence we may perceive the fallacy of the opinion, that remaining in a medium for hours, of a degree of heat beyond, or equal to our natural warmth, tends to relaxation; except indeed in very extreme cases. The daily exhaustion we experience, must be restored by sleep, and that sleep, to be sound and recruiting, must be cherished by quiet and *warmth*.

In the early stages of human existence,

and in those periods of advanced age where debility is very great, warmth is absolutely indispensable. In all diseases of debility also, when conveyed by the bath, it has the most salutary effects. Dr. Franklin, who lived to a very advanced age, was, from his own personal experience, firmly convinced of the truth of a favourite opinion of that justly distinguished medical philosopher Dr. Darwin, that the frequent and well-regulated use of the warm bath rendered the eve of life more comfortable and agreeable than it would otherwise be.

In Count Rumford's case, as related by himself, the efficacy of the warm bath, used for half an hour each time in the forenoon at regular periods, for thirty-five days in succession, is shewn in a very

striking degree. Perseverance in this plan improved his health in a most remarkable manner, and affords evidence of the good effects of a remedy, which at distant intervals, and for short periods, he had used without any advantage.

The plan of using the warm bath once or twice a week, and for the short space of a quarter or half an hour each time, should be looked upon as generally nugatory, often delusive, and not unfrequently mischievous. As to a general standard, by which we should regulate the time of remaining in the warm bath, it is a matter quite impossible to establish, although, from what has been premised, the symptoms of disease, the climate in which we live, and a reference to the principles laid

down, may afford a rule sufficiently plain and useful for common practice.

In Switzerland, the time of remaining in the warm bath is from six to twelve hours; at Pfeffers, one half of the body is exposed for many hours in succession to warm vapour, while the other half is immersed in the bath.

At Landeck, in Silesia, the practice of continuing in the warm baths, in all cases of debility, for hours at a time, is also very general, and attended with the happiest effects. These, and facts of a like nature, lead to the consideration of an erroneous opinion very generally entertained, that all warm baths are of a relaxing nature. This opinion is grounded on the supposition that

their tendency must necessarily be of an opposite description to that of cold baths, which are known to be of a bracing quality.

Heat, duly modified, gives renovated vigour to animal and vegetable existence, and only produces relaxation when immoderately applied. This is most strongly exemplified in those warm climates where it is not excessive; there, the inhabitants are accustomed to remain long in the warm bath, which, as they express it, "feeds and nourishes their blood." Were it relaxing, the relief it is known to afford in cases of the utmost debility, attended with colliquative sweats, would not necessarily follow. In the Levant, and in Italy, no disease of relaxation is thought to be

effectually removed, without the warm bath; and in every species of intermittent, where affections of the liver so often accompany the disease, its successful application is remarkable. In Spain, a kind of vapour bath, of a very efficacious and penetrating nature, is formed from the pulp of olives, the *Horeijo de Areitunas*, after the oil is expressed, by suffering a gradual fermentation to take place; when, by this process, the necessary heat is generated, the patient is confined under the heap, a due attention being paid to the position, so as that respiration may be free; and by remaining for one, two, or three hours, and repeating the bath at regular periods for many days in succession, several diseases arising from debility, are most effectually removed. In this country I have known

brewers' grains, while possessing the proper degree of heat, serve purposes very similar; as in debility of the spine, and in some stages of that dreadful strumous disease, which so often affects the hip joint: in cases like these, heat, whether applied in the form of vapour or otherwise, gives vigorous tone to the action of the skin, that important emunctory, on whose healthy condition our nervous energy, the digestive powers, the secretory functions of our vital organs, and the regular circulation of our blood, depend in so considerable a degree; and which, when at all discomposed, is restored to order by the warm bath, much more certainly and effectually than by any other means with which we are acquainted. In cases of suspended animation from drowning, inhaling noxious air, or from

any other cause, the revivifying power of heat is well known ; but except the application of it, in these and other cases, be continued for a considerable length of time, it will often fail to produce the effects expected.

Within the last year, in four cases of asthma, and in three of gout, where excessive debility was induced, the most undeniable proofs of the necessity and advantage of remaining in the warm bath more than twice the usual time, came under my observation.

Among these, a young unmarried lady, who had for an asthmatic affection used the warm bath, irregularly and at distant periods, without advantage, experienced

considerable relief, by remaining for one hour in the afternoon of each day, for two months in succession, in a bath of the temperature of 94 degrees; and by a necessary regularity in diet, and very little assistance from medicine, is now nearly recovered.

The Egyptians are almost strangers to asthma; and this, with an exemption from many other complaints, M. Savary imputes to their frequent use of the warm bath, often in the form of a steam bath. A species of the latter kind, called the *temazcalli*, is frequently used by the Mexicans, to produce a copious sweat, and is found very useful in the diseases of their climate. This bath is not unlike the dry baths of the ancients, as mentioned by Celsus and

others, which were heated by means of sand, ashes, stove-rooms, or water converted into vapour.

One of the cases of gout to which I alluded, was attended with loss of power in the lower extremities, pain and inflammation in the joints, defect of appetite, constipation, and considerable debility. In this case the warm bath, at the temperature of 95° , was used during the space of nearly an hour each time: sea-water of the same temperature, in a continued stream, was poured on the joints, the patient remaining in the bath, and increasing or diminishing the action of the flow of the water, by sinking the limb or raising it more towards the surface of the bath: his bowels were kept regularly open by saline

purges; and he persevered in the use of dried soda, formed into pills. In the course of three or four months his complaints were so far removed, that the power of his limbs was in a great measure restored, and his general health considerably amended.

The amendment in the other cases was as manifest, but the symptoms attending the complaints were not so obstinate. I select the above as examples, from a great number of similar instances, where remaining in the bath for a considerable time longer than is customary in this country, has been attended with the happiest results.

In most of the cases where warm baths

are necessary, not only remaining in the bath for as long a time as the person can well bear it, but a continuance of their use for some weeks, will be found a requisite course to pursue; and when steadily persisted in, is capable of affording relief where other means would have proved unavailing, or where the remedy itself, used differently, would lead to fruitless results and disappointment. Indeed, on this point I cannot insist with too much earnestness, as on it the character and success of this most salutary practice depend; and hitherto, from its not having been more particularly attended to, has arisen a want of confidence in a mode of cure, of more general importance to the comfort and relief of mankind, than it is possible to conceive.

The warm bath is usually divided into warm and tepid; the latter beginning at 83 of Fahrenheit, and the former ten degrees higher, or five degrees below the average standard of animal heat. By referring to this standard, and by means of the thermometer, we can guard against those errors which brought the use of the bath, about the time of Nero, into discredit; for at that time, baths heated to an unusual degree were much resorted to, and often proved very hurtful. Formerly, considerable confidence was placed in the *Balnea Dulcia*, impregnated with emollient herbs, and in medicated baths of various kinds; but the abuse of these has rendered them in modern times less sought after. It may also be remarked, that though the establishment of public baths,

even of an inferior description to those of ancient Rome, might be useful to the community, yet the prevalence of syphilitic infection at present, might operate as a bar to their being extensively employed in the lower ranks of society.

In an earlier part of this work, I should have said, that the general and topical application of cold, in cases of incarcerated hernia, has been found a very effectual means of relief: of this I have had ocular proof.—The subject is fully treated of by Mr. Geoghegan, surgeon in Dublin, in a work interspersed with many original facts and observations.

Time for entering the Warm Bath.

The best time for entering the warm bath, may in part be inferred from the preceding observations; but in general, the practice, as mentioned by Plutarch and others, of the Greeks, of using the bath previous to their principal meal, which corresponded as to time, with our present dinner-hour, may be considered as preferable.

Our healthy digestion has, as has been already observed, a very natural connection with the salutary functions of the skin, and no stimulus can be so natural to it as a well-regulated bath at this particular time of the day, while that restlessness which it occasions, if used later, will be avoided.

The apprehension of being chilled, and suffering from cold by exposure to the open air after the bath, is, generally speaking, not well founded, as very few instances occur where mischief arises from this source; and in innumerable cases, the usual occupations of life are pursued through the remainder of the day, without any bad consequences.

I have known some few instances, where the warm or tepid bath has been used with considerable advantage in the morning, immediately after rising from bed; and if the sleep has been restless and irregular, it will prove an admirable substitute in irritable habits, while at the same time it will prevent the recurrence of broken and unrefreshing rest.

In some obstinate cases of dyspepsia, arising from hepatic obstruction, the relief was very striking. I am of opinion, that the warm bath at this time of the day, is most suitable to many complaints proceeding from visceral obstruction; whereas, if used at a different hour, it would not have so good an effect, more particularly in cases where an increase of pulse is observable in the morning without any ostensible cause, but which denotes a more or less considerable derangement in the functions of some vital organ. When the evening or night is fixed on, in order that the process of digestion may be finished, dinner should be taken proportionably soon, and the bath used at a moderate temperature, otherwise those feverish feelings to which irritable habits are so subject, may be brought on

during the earlier part of the night. Lord ——, after labouring under a disease of considerable debility, more particularly affecting his stomach and alimentary canal, was removed from London to Brighton for the benefit of marine air and warm sea-bathing; his nights for some time after his arrival were restless, his skin hot, accompanied with other feverish symptoms, owing to his going into a bath of an improper temperature late in the evening, and afterwards dining. By this error his recovery was protracted; but his physician altering the plan, by directing his bath and dinner in the afternoon, an amendment took place, succeeded by a complete recovery. The practical induction from this case, is a farther confirmation of what is observed on one very similar, in page 73.

The time of the year best suited to the use of the warm bath, is a question of some importance. In the temperate and warm months, I consider the advantage to be derived from it as more permanent and considerable than when it is used in the winter ; but as it most commonly happens that the time of the year cannot be chosen by those labouring under disease, this remark must be regarded only as general. In scrofula, gout, rheumatism, and in all chronic cases, however, the observation will be found under various circumstances extremely applicable.

Before dismissing this part of the subject, it may not be improper to observe, though to those who have had any practical experience in either cold or warm bathing,

the fact must be well known, that the feeling is much pleasanter and more comfortable, when there is space sufficient to admit of exercising the limbs in the bath without restraint.

In every town and village among the Turks there is a public bath, the practice of bathing being constantly adopted, as well in conformity with the religious precept of Mahomet, as to preserve and promote cleanliness, in a country where perspiration is so easily excited. The manner of bathing at Cairo is thus described by M. Savary: "The bathers are not imprisoned here as in Europe, in a sort of tub, where one is never at their ease. Extended on a cloth spread out, the head supported by a small cushion, they stretch themselves

freely in every posture, whilst they are wrapt up in a cloud of odoriferous vapours, which penetrate into all their pores.”

Sea Air.

It has already been remarked, that the cold or warm bath is not attended with the same advantage at a distance from the sea as on the coast: this arises in a considerable degree from the good effects known to ensue from the removal of invalids to an atmosphere which is constantly renewed and rendered pure by various causes. At some distance from the shore, the air is less pure than on the coast; and in the latter situation, it is considerably more conducive to general health than in inland or marshy districts, or in the neighbourhood of towns and

extensive manufactories. Under this impression, numbers fly the crowded town in the summer months, and resort to the coast, where the change of scene, added to the greater purity of the air, increases the enjoyment and vigour of existence; but it is not a little extraordinary, that although the evidence is so strong in favour of this salutary plan, the sea-shore is abandoned during the winter months, and the cities and towns filled with beings, to whom a pure atmosphere is particularly necessary; never recollecting, that those causes which render the air of cities and large towns unwholesome, are tenfold more effective during the winter than the summer season. Those therefore who are benefited by the sea air, will find a residence on the coast during the winter and temperate

months, in many cases productive of more advantage than in the hot and sultry summer season, when exposure to the relaxing temperature of the atmosphere frequently diminishes the good effects arising from being on the coast. On many parts of the sea-shore the air is contaminated during the summer and autumnal months, by the putrefaction of sea-weed and other vegetable substances: such situations must be peculiarly unfriendly to invalids, and ought therefore to be carefully avoided. Those districts where the soil is dry and calcareous, where the coast lies high, and where the surrounding country is open, and free from the inconveniences already mentioned, should be selected, as most proper in all diseases of relaxation, since in these situations, cold or warm sea-bathing may be assisted and

accompanied by gentle exercise in a salutary and wholesome atmosphere.

Within these few months a gentleman, aged 50, mentioned to me, that for a considerable time he had been daily tortured with head-aches, which were first brought on by anxiety of mind on the death of his wife, and from other subsequent melancholy events: while he remains in London, or Liverpool, his complaint is almost continual; but on his coming to Brighton the head-ache vanishes; his sleep, which in the former places is short and interrupted, becomes calm, continued, and refreshing; his stomach is never out of order, and his appetite unusually keen.

Those who use the cold or warm sea-bath, very soon become sensible how much the air of the coast contributes to general health; indeed, in almost every instance, its good effects are far more considerable than is generally supposed. To the young, and those debilitated by years, its influence is often surprising; children, whose existence seems precarious in the air of large towns, very soon become vigorous when removed to the sea, where also the aged valetudinarian is often seen to obtain a regeneration of health and spirits:—in these stages of existence its good effects are most manifest; and to those in the vigour of life, the stimulus derivable from wine, or fermented liquors, is amply supplied by the revivifying effects of sea air alone; so much so in-

deed, as to render their use in most cases quite unnecessary. To these general facts may be added, the evidence arising from the health and vigour of the resident inhabitants of the sea-shore, who are strangers to the melancholy catalogue of diseases which annually prevail in inland situations, and who present numerous examples of unusual and vigorous old age.

These facts are satisfactorily accounted for, when we consider the means by which the purity and healthy state of the atmosphere is constantly renovated: this is principally effected by the process of vegetation, and by the influence which waters of extensive lakes and rivers, when agitated, are known to have in absorbing from

the air the most noxious part of its composition, rendering the contiguous country comparatively healthy.

It is on a grand scale that this process is performed by the ocean, more especially when its waves are agitated by a storm: the air, after such an occurrence, is invariably found to be more salubrious, particularly in warm climates, where after a hurricane, its healthy state is always exceedingly improved. From actual experiment it has been ascertained, that contaminated air is rendered pure more rapidly, and in a greater degree, when agitated with sea than with fresh water. Hence we may perceive why the mercury in the barometer should be found to rise higher near the sea than at a distance from it; the air, being pure in

proportion to its density, and consequently occasioning, in such situations, a greater degree of pressure.

In the vegetable kingdom we cannot but admire the wise provision established against the impurity of the atmosphere, on a scale equally grand and extensive. The healthy condition of plants depends in a considerable degree upon their absorption of that portion of atmospheric air which is inimical to animal respiration, and on their giving out large portions of pure or oxygenated air, which is most friendly, and indeed indispensable to animal existence. Were it not for these operations of nature, the accumulation of impurity in the atmosphere must increase to a most alarming degree, from combustion, fermentation, putrefaction of

animal and vegetable matter, respiration, and various other causes.

The circulation of air along the surface of the sea moderates its temperature, so as during the winter months to render it less chilling, and in the sultry heats of summer to diminish its overcoming influence, thus adding to its salubrity. By passing through a gentle current of such an atmosphere, while exercising along the coast, or by sailing when the weather is fine, invalids derive considerable benefit.

No practice is more firmly established, than that of inculcating change of air in chronic diseases, nor from which more advantage arises. Dr. Mosely, in his *Treatise on Tropical Diseases*, strenuously insists on

the necessity of removing patients to situations of a nature opposite to those in which their complaints originated—from land to sea, from sea to land, from mountains to valleys, from valleys to mountains—and imputes the advantage derived from sea voyages solely to sea air. “It is from the *aer purus*, the *navigatio longa*, the *vita in mari traductio*, the *vita in mari acta*, the *vita in mari degitur*, from whence the benefit arises.” There is a large portion of saline particles held in solution by the air of the sea, which appear to have a great share in producing the advantage known to arise from living on the coast: it is this ingredient that acts so powerfully on the surface of metals, and on the beauty of some vegetable colours; evincing to our view the most obvious difference in the qualities of

sea air from that of more inland situations. Thus considering, that the purer the air the better it is suited to healthy existence, we can confidently depend upon the most salutary results arising from the action of sea air, in almost every modification of chronic disease.

DISEASES

TO WHICH THE BATH IS APPLICABLE.

To enumerate the different diseases in which cold and warm sea-bathing are useful, and those circumstances which ought to induce a preference to the one or the other, would far exceed the limits of the present work, in which the object is rather to give general observations and rules, than a minute and particular detail of facts.

It may, however, be remarked, that with very few exceptions, in all diseases arising from a diminution of vigour in the animal and vital functions, this remedy, in one form or other, may be beneficially em-

ployed ; and therefore, instead of particularizing the various shades of difference in its application, or entering into an unnecessary history of those complaints in which almost daily experience proves it to be useful, it will serve a much better end to take into consideration a few of the most serious affections, where the advantages resulting from it are most obvious, such as gout, chronic rheumatism, scrofula, and that class of diseases commonly designated nervous.

Gout.

The gout may be considered, under all its characters, as one of those complaints frequently alleviated by the conjoined use of the warm bath and a residence on the sea coast. In those stages of the disease

where the use of the Bath waters is found salutary, a decided preference is given by many to a well-regulated bath of sea water; and in the absence of the gouty paroxysm, and during the consequent relaxation in the limbs, the good effects of sea-bathing have been experienced in innumerable instances; but it should never be employed while any active gouty process exists in the system, lest it might induce an irregular state of the disease, which in every instance is unfriendly to general health, and has been often productive of fatal consequences.

In irregular and atonic gout, when the constitution is deficient in energy, in not producing regular paroxysms, the warm bath has considerable power in bringing on a more marked and distinct character of the

disease; and by this the general health in almost every instance, is very much improved. This is still more effectually secured by the clear dry air of the sea coast, where, in most situations elevated above the surface of the water, it is devoid of that chilling humidity which is so apt to give rise to a gouty excitement in constitutions predisposed to the disease. Gouty subjects suffer more from damp air, than from most other exciting causes: cold, to a considerable degree, is endured with comparative impunity; but when accompanied with damp, it excites gouty action in so many instances, that too much caution cannot be taken to prevent its accession.

Insensible perspiration flows more regularly, in most persons, while living near the

sea than elsewhere; and although we have but few facts to prove that the skin throws out a greater quantity of perspirable matter during a residence by the sea-side; yet on many its influence is such, as to occasion a very observable diminution of the alvine evacuation, and the secretion of urine, arising from an increased cutaneous action. In sea voyages, this fact has been particularly and frequently noticed.

In Sept. 1812, Mr. L. of London, who had been for some years, at irregular periods; affected with gout, laboured under a paroxysm of the disease, which was not quite at its height, when he was under the most urgent necessity of attending a dying relation, at the distance of five miles. Being closely shut up in a carriage, on his

arrival he took every precaution against cold, concluding that no bad consequences would ensue; but a few hours after his return home, he was seized with a most painful affection of the rectum, attended with strangury, which brought on a catarrhus vesicæ. After some time a mitigation of his complaints took place, and he came to Brighton, where he had remained only a few days, when he found by the change of air alone, independently of any other means, a glow of gentle perspiration regularly come on at night, which soon diminished the above-mentioned distressing symptoms, and in about a month he was considerably recovered. At this time he returned to London, where, in less than three days, symptoms of gout, accompanied with a recurrence of the painful affection above

mentioned, began to threaten him;—he again visited Brighton, and a further residence removed all his complaints. This is one of the many wayward appearances gout puts on, and a proof of the salutary effects of sea air on the disease. In those affections which owe their anomalous symptoms to what is called irregular or atonic gout, I have often seen a residence for some time near the sea, and the warm bath, of the most manifest use, not only in bringing the symptoms to a more regular character, but also in giving sufficient vigour to the constitution to throw off the fit in a regular way, and in improving the general habit.

In cases where gout has, by its reiterated accession, considerably debilitated

the joints, rendering them stiff and powerless, the application of warm sea-water to the parts affected, by means of pumping, or in a continued stream from a *douche*, is followed by the most happy effects; warmth and friction, from the flow of the water, acting in this way more efficaciously than by any other mode of practice. The patient, during this process, should remain immersed in the bath, regulating, as in other cases, the force of the current from the pump, by bringing the limb nearer the surface of the water, or sinking it deeper, according to his feelings, or the circumstances of the case. In every case of gout, particular attention should be paid to the state of the bowels; in general no purgatives will be found to answer the same good purposes as well regulated doses of the neutral

salts. The fear of using any purgative that is not of a *warm nature*, has often led to serious error in the treatment of gout. This disease has its origin principally in the stomach and alimentary canal, and it has often terminated fatally by inattention to the proper functions of these organs; in all diseases affecting the limbs, a proper regulation of the state of the bowels is of primary consequence, and purgatives persisted in with *strict regularity*, will often effect what is not to be attained by any other means.

Rheumatism.

Many of the features of rheumatism so nearly resemble those of gout, that we are sometimes at a loss to draw the line of distinction; but in most respects the treat-

ment of both diseases is very similar, especially in respect to the application of the warm bath, which in cases of what is called chronic rheumatism, is a remedy on which the greatest reliance may be placed. In rheumatic cases, external applications to the part affected, are used with less fear of alarming consequences than in gout; but even here we should be very cautious and circumspect. Mrs. W. who was considerably advanced in life, for the relief of rheumatic pains affecting her knees and ankle-joints, had the parts thrice carefully embrocated with what is sold under the name of essence of mustard. On the third application she was seized with vomiting, succeeded by a fixed pain under the sternum, and violent head-ach. After the effects of a purgative medicine, she was put

into a warm bath ; by its repetition, in a few days these unpleasant symptoms went off: the pains however returned to her joints, but were ultimately removed by a continuance of the same means and by gentle sudorifics ;—she was in her 76th year.

Rheumatic patients should be particularly cautious respecting the temperature, frequency, and time of entering the bath ; general rules can be laid down with less certainty here than in any other disease ; mistakes often occur, and they cannot be avoided so well as by a reference to the principles already explained, and a due regard to the particular nature and origin of the disease.

Scrofula.

The prevalence of scrofula, and its manifest increase in every rank and class of society, is a matter of the most serious concern. It is foreign to our present purpose to investigate the causes to which this ought to be attributed; but such are its ravages on the most delicate, and often the most beautiful of the human race, that no exertion should be wanting towards lessening so general an evil.

The character of this disease is extremely varied, the symptoms often uncertain, and in many instances its commencement is insidious, and its advancement obscure and irregular.

Scrofula should be divided into two distinct species. Dr. Cullen mentions four, but his species are evidently symptomatic.

That species of the disease arising from hereditary causes, when aggravated by climate, errors in diet, and other circumstances, is much more difficult to remove than a milder kind, which owes its origin to casual circumstances, and in which the conglobate glands alone become tumefied and diseased.

The general appearance of those who are sufferers from the first-mentioned species, becomes altered; their aspect, formerly clear and florid, puts on a pale, flaccid, unhealthy hue; the glands of the neck in the first instance, and afterwards the sub-

maxillary clusters enlarge and tumefy; their functions are imperfectly performed; obstructions succeed, forming hard, unequal, and irregular swellings, which advance or recede, as they are affected by the increase of the complaint or the influence of the climate, becoming worse during the spring and towards the approach of winter, indicating in the most observable manner, the changes occasioned in the disease by the varying temperature of the seasons.

In climates where a regular degree of warmth exists, scrofula is seldom seen: persons affected with it, on removing from a cold and damp latitude to such situations, very soon recover; while, on the other hand, if the taint exists in those who remove from a warm district to one where

cold and damp prevail, the disease generally appears, and is extremely difficult of cure.

A sluggish, indolent, and irregular kind of inflammation takes place in some of these tumors, and after a considerable time, suppuration of a peculiar nature succeeds, to which follows ulceration, often of a very bad description, the perspiration, at the same time, in some persons, being of a heavy disagreeable odour.

In this stage the conglomerate glands frequently become affected, and the course of the lymphatics, in the direction of the subclavian branches on to the glands of the axilla, put on a diseased appearance, suppurating and healing in irregular succes-

sion ; in short, experience and observation are required to form a judgment of the state of the parts affected, and the danger arising from the succeeding symptoms—a danger which is in proportion to the importance of the organs principally concerned, and the degree of virulence that may characterize the complaint.

The discharge from these ulcers changes in its nature, being sometimes purulent or serous, and at other times of a kind intermixed with a cheesey-like substance. They heal slowly and imperfectly, after continuing to discharge for months, leaving indelible eschars of an unsightly and discoloured appearance. In this species of scrofula, the diseased action sometimes commences in the spine, or in the joints of the fingers, toes, or larger articulations,

encompassing these parts with angry swellings, which terminate in fistulous sores, and ultimately in *anchilosis*, or loss of flexion.

Of this kind is the scrofulous inflammation and abcess of the hip joint. The commencement of this dreadful complaint is of so insidious a nature, that a few of its most striking symptoms may be stated, to put the unwary on their guard against its approach. Its subjects, are those from childhood to the age of fifteen: a lameness, at times scarcely perceptible, with occasional indolence and languor, takes place, which is at first imputed to accident or caprice, until weakness and a disinclination to active motion increase, and the lameness is more observable: while standing, the person places his weight principally on the sound

limb, the muscles of the other being relaxed, and the heel raised from the ground; or if sitting, the inclination is to the unaffected side. On examination, the diseased limb is found to be longer, and its circumference in all the muscular parts less, than in the other. The elongation will be more observable on placing the limbs together in a horizontal position, or by arranging both heels in a line, while the person stands erect.

At this stage of the disease, and subsequently in its progress, the knee is affected with pain, greater and more tormenting than even in the hip joint; at this juncture an inflammation exists, generally affecting the cartilage of the head of the thigh-bone, as well as that of the cotyloid cavity,

while at the same time the capsular ligament becomes diseased and thickened.

This is the condition of the parts as they appeared on dissection to the late Mr. Ford, who has written on this subject with great ability; and from this fact he, and the ingenious Mr. Copeland, deduced a practical observation of the utmost consequence in treating this complaint at its commencement, when much greater advantage may be expected from surgical aid than in the after stages. I allude to the parts being at this time in a state of inflammation, requiring attention principally to this fact. When suppuration commences, it is generally succeeded by an evident shortening of the limb, fistulous abscess, caries of the bone, and all the melancholy train of mi-

sery attendant on the accession of hectic fever.

Strumous diseases of the spine are more easily detected at their commencement, and on them it is needless here to enter; it may, however, be observed, that under these circumstances, as well as in the inflammatory stage of the hip disease, an effort towards cure may be often made with success, which in the subsequent progress of the complaint is generally found to be fruitless.

In the genuine scrofula, where any of the principal viscera become seriously affected, as the lungs or mesenteric glands, pulmonary consumption, or marasmus are among the consequences. In these, and indeed in most scrofulous cases, there is a great

deficiency of bodily strength, attended with quickness of pulse. Notwithstanding this, the animation and vivacity of persons so affected are remarkable, the intellect is generally clear, the perception quick, and the susceptibility of impressions often astonishing.

In the milder species, the affected glands are enlarged and indolent, even for years, without any disposition to suppurate. The external skin is not discoloured, and the tumors do not adhere, but are moveable within the cellular substance, and the general health is unimpaired. Females are more particularly liable to this complaint; an enlargement of the thyroid gland, is also in a great measure peculiar to the sex, and has a very strong sympathetic con-

nection with the functions of the uterus. The tumor forms in the fore-part of the neck, between the integuments and the wind-pipe: it commences long before the age of twelve, and increases for four or five years, until it occupies the whole front of the neck.

The bronchocele is common on the Alps, in the mountainous districts of Switzerland, where it is called the *goitre*, and in the hilly parts of the north of England, particularly in Derbyshire. It evidently derives its origin more from local peculiarities than from hereditary taint, as does the milder glandular affection just treated of, and which does not merit the name of scrofula.

The description of scrofula, as given above, brief and imperfect as it is, would on the present occasion be superfluous, were it not necessary to show that cold sea-bathing should no more be looked upon as a specific for the cure of this disease, than the touch of Edward the Confessor in the days of ignorance, and in after-times, when this royal superstition was exercised with such absurdity, and received with equally ridiculous credulity.

The advantage to be derived at the seaside, by those who labour under the various modifications and degrees of this disease must totally depend upon adapting the means to the particular circumstance of each case. That class of scrofulous suf-

ferers whose debility is considerable, whose glandular system is deeply diseased, whose animal functions are impaired, and whose constitution is enervated, must expect relief principally from the warm bath, aided by the benefit of sea air: to patients of this class the cold bath is as injurious, as in other degrees of the disease it proves salutary. There is no point in the practical exercise of the medical profession, in which the misapplication of this most important means of relief occurs so often, and with such repeated mischief, as in this.

Scrofulous patients are sent to the sea, and they are informed that sea-bathing has been found a principal source of relief; hence, in many instances, disappointment

follows, from a want of proper discrimination in its application.

The prevailing error, that in this disease medicine can do little, has a most mischievous tendency; this arises from the misapplication of the remedy, and the folly of expecting, that what may at one stage of the disease be considered as salutary, will prove equally so at another.

The gradations and changes of strumous affections require to be carefully and sedulously watched; and patients should be strongly impressed with this conviction, in order that the physician may have a fair opportunity of adapting the remedy to the exact nature of the disease.

Within the last twenty years remedies have been used for scrofula, which before were quite unknown. Every day's experience gives proofs of their efficacy, and at the same time equally shows that the most powerful remedies, to secure success, must be administered with judgment, and that the most serious evils may arise from a mistaken belief respecting the inutility of exertion to counteract the mischief.

Rickets.

This disease generally attacks the first or second year of infancy. It does not betray itself by morbid appearances in the superficial glands, but the viscera become affected, the countenance palid, the abdomen tumefied, limbs wasted, and the process of ossification imperfect; manifested by

an enlarged head, with very apparent sutures; chest squeezed in, and flat at the sides, raised high and pointed; imperfect and half decayed teeth; the pulse at times very quick; appetite sometimes voracious, sometimes weak and vitiated, with acidity in the stomach.

The offspring of parents of a lax fibre and luxurious habits, generally suffer from this disease, which is soon confirmed by improper food, confined air, tight dressing, and not unfrequently by the reiterated use of purgative medicine.

In few instances of this complaint is the cold bath admissible, on account of the want of the necessary constitutional reaction.

Some months ago, the infant of a mechanic was brought to me, labouring under the fatal symptoms of hydrocephalus. For some weeks previously a tepid bath of veal broth had been used, at the suggestion of a nurse, which its parents informed me had much improved its health; but by the injudicious advice of a medical practitioner, cold sea-bathing was begun: after a few immersions the infant languished, and the deadly disease set in with all its violence.

To infants much affected with rickets, I conceive, that in nineteen cases out of twenty, cold bathing will prove injurious; while from every view of the subject, added to many practical proofs, I can with confidence advise sea air and warm sea-water bathing, as a principal means of relief.

I have, in the foregoing pages, confined myself to the view of some of the most prominent diseases in which sea-bathing, both warm and cold, is resorted to as a remedy. There are many others in which, under the advice of the judicious physician, its application will prove equally beneficial; but the desire of making this pamphlet generally useful, obliges me to contract it within limits which exclude the consideration of diseases less dangerous, and less universal.

THE END.